

**PITFALL TRAPPING CICINDELIDAE
(COLEOPTERA) AND ABUNDANCE OF
MEGACEPHALA VIRGINICA AND *CICINDELA*
UNIPUNCTATA IN THE PINE BARRENS OF
NEW JERSEY¹**

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ABSTRACT: Successful pitfall trapping of two species of Cicindelidae that have been infrequently collected in New Jersey is reported. Three other cicindelid species also were taken in pitfalls. Both *Megacephala virginica* and *Cicindela unipunctata* are more common in New Jersey than previously reported.

Although it has been known for a long time that both *Megacephala virginica* (Linnaeus) and *Cicindela unipunctata* Fabricius occur in New Jersey, there have been only three collection records of *M. virginica* and only limited records of *C. unipunctata* (Boyd, 1978). Since that publication, the collection of one additional specimen of *M. virginica* has become known, this by Joseph Dinardo of Levittown, PA on July 16, 1977, under a piece of old, scrap plywood 3/4 mi. south of Whiting, Manchester Twp., Ocean Co., NJ.

Megacephala virginica is known to be a nocturnal species, often collected around lights at night in southeastern United States (Graves & Pearson, 1973). The few daytime collections have been limited to specimens that have been exposed by lifting up or turning over rocks, logs, boards, etc. (Graves & Pearson, 1973; Whitehead in Boyd, 1978; Dinardo, above; N. Elliott, pers. comm.).

Several reports of *C. unipunctata* indicate it often is found in the late afternoon, sitting motionless, sometimes partially hidden under dry leaves (Thompson, 1915; Graves & Pearson, 1973; Boyd, 1978). From these and other reports, it is believed that *C. unipunctata* may be crepuscular.

Many collectors have spent endless hours searching for these two species in New Jersey during daylight, late afternoon, and dusk hours, mostly to no avail. During the late summer of 1984, pitfall trapping was proven to be a successful method to collect these species.

Pitfall trapping of *Amblychila* sp. (Dunn, 1980), and *Omus* sp. in western United States has been done with success for years, but pitfall trapping of either *Megacephala* sp. or *Cicindela* sp. has not been reported

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from eastern United States. This paper reports that pitfall trapping is the best means to locate and collect both *Megacephala virginica* and *Cicindela unipunctata* in the pine barrens of New Jersey.

Leading up to this project, on the weekend of July 21 & 22, 1984, Mark Schreder of Pottsville, PA collected four *C. unipunctata* on open sand in areas of mottled sunshine and shade, along the edges of white sand and gravel trails through the scrub oak (*Quercus illicifolia*) and black-jack oak (*Q. marilandica*) and pitch pine (*Pinus rigida*) pygmy forests in the west plains area of the pine barrens, Woodland Twp., Burlington Co., NJ. Two of these *C. unipunctata* were a mating pair walking among some leaves at 4:15 p.m. on July 22. The other two were sitting, each solitary and motionless, on the sand between 5:00 and 5:30 p.m. On August 7, 1984, shortly after 4:00 p.m., Boyd collected one *C. unipunctata* running on the sand along the edge of the pygmy woods. One other specimen was taken, sitting motionless on the sand, around noon on a cloudy day, August 12, 1984, by Robert Tebin of Pottsville, PA.

MATERIALS AND METHODS

On Saturday, August 11, 1984, with the intent of trying to collect specimens of *C. unipunctata*, Schreder and Tebin set out eight barrier type pitfall traps in small clearings in edges of the pygmy woods, just off sand and gravel trails. These traps consisted of shallow, wide-mouth, glass jars, one third filled with an ethylene-glycol base anti-freeze solution, set in the ground with the top of the jar at ground level. Barriers, usually four in number, of 10 cm. high, green, plastic lawn edging were installed and staked in a cross formation, each barrier extending outward from a jar for 60 to 90 cm. along the ground. A glass cover was placed on stakes above the jar to keep out rain.

RESULTS

The next day, August 12, Schreder collected two *C. unipunctata* in his eight traps. Six days later, on August 18, Schreder, accompanied by Boyd, visited his traps and collected one *C. unipunctata* in each of two traps, and, to their surprise, 14 *M. virginica*, two of which were in one trap, one in a second trap, and 11 more in a third trap.

Boyd then set out 12 more traps, at widely scattered sites throughout an approximately 2.6 sq. km. section of the west plains, and visited these and Schreder's eight traps (total 20 traps) at intervals of two to six days, depending on weather and temperatures. These visitations resulted in the collection of 19 more *M. virginica* and 8 more *C. unipunctata*. Also taken

were 4 *C. patruela consentanea*, 6 *C. punctulata*, and 2 *C. rufiventris*. No tiger beetles were taken after September 14 and trap visitations were terminated October 5, 1984. The collection record shows that *M. virginica* specimens were collected only when the mean of the average daily high and low temperatures remained above 19° C. See table 1.

Whereas only four specimens of *M. virginica* were known ever to have been collected through 1978 in the state of New Jersey, 33 specimens were collected during a 34 day period in the late summer of 1984 as a result of pitfall trapping in a very small portion of the west plains sections of the pine barrens. Of the 20 traps in operation, one or more *M. virginica* specimens were taken in ten widely separated traps. This species now should be considered common in the pine barrens of Burlington, and probably Ocean, counties, NJ.

In the case of *C. unipunctata*, the 12 specimens collected via pitfall

Table 1. Pitfall trap collections, August 12 - September 14, 1984, in the west plains of the pine barrens, Woodland Twp., Burlington Co., NJ.

Coll. date	Coll. per'd. (days) ¹	Temperatures (C°) ²			No. traps	No. and species taken				
		Av. min.	Av. max.	mean of av. temps.		<i>Meg. vir.</i>	<i>C. uni.</i>	<i>C.p. cons.</i>	<i>C. punc.</i>	<i>C. ruf.</i>
Aug.										
12	1	20.0	28.0	24.00	8		2			
18	6	18.7	30.7	24.70	8	14	2			
23	5	13.1	26.6	19.85	15	1	1			
25	2	11.4	26.9	19.15	19	2	1			
27	2	11.9	28.6	20.25	20	1	1			1
29	2	16.1	28.6	22.35	20	3			2	1
31	2	17.5	30.3	23.90	20	7		1	1	
Sept.										
4	4	13.6	28.7	21.15	20	4	3		1	
7	3	6.3	22.4	14.35	20		2	1	1	
9	2	4.7	26.1	15.40	20				1	
11	2	16.1	27.2	21.60	20			1		
14	3	15.6	27.6	21.60	20	1		1		
	34					33	12	4	6	2

¹ All collections made between 8 a.m. and 12 noon on day recorded, thus reflecting minimum temperature of that date and maximum temperature of previous date.

² Centigrade temperatures converted from Fahrenheit temperatures taken at official U.S. weather observation station, Pemberton Twp., Burlington Co., NJ, the nearest point to the west plains for which daily temperatures are recorded. Fahrenheit temperatures courtesy of Philip E. Marucci, Blueberry/Cranberry Research Center, Rutgers University, Chatsworth, NJ.

trapping in these same west plains in 1984 exceed the total that records indicate had been collected in the entire state over the past 69 years, or since Thompson collected his 21 specimens back in 1915. *C. unipunctata* also is widespread in the pine barrens, having been taken in seven widely separated traps. Further, when the six specimens taken on the surface by Schreader, Tebin, and Boyd during the daytime between July 21 and August 12 are added to the 12 taken in pitfall traps, the total of 18 specimens taken indicates that *C. unipunctata* is more common in the pine barrens of New Jersey than previously realized.

Clearly, pitfall trapping is an improved method of collecting these two species, especially *Megacephala virginica*.

ACKNOWLEDGMENTS

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SOCIETY MEETING OF MARCH 20, 1985

The fourth regular meeting of the American Entomological Society was held on Wednesday evening, March 20, 1985, in the Entomology/Applied Ecology Department of the University of Delaware, Newark, DE.

The meeting was called to order by President Fuester. A brief report of business transacted at the preceding Council meeting included: 1985-86 budget preparations, a review of the Society's tax status, solicitation for speakers and programs at the 1985-86 meetings, advertisement of the Society, and the reception of a grant by Sylva Baker to be used for cataloging and maintenance of the Society's library and archives.

President Fuester called for notes of entomological interest. Paul Schaeffer reported on the geographical distribution of a newly established predator on aphids, *Coccinella septempunctata*. Howard Boyd displayed several specimens of an ichneumonid *Theronia* sp. currently appearing in large aggregations around dwellings in the New Jersey Pine Barrens.

The guest speaker, Mr. Theodore L. Spilman, USDA (retired) was introduced by Bill Day. Mr. Spilman presented an in-depth review of the sociological, economic, and scientific aspects of two early American communal societies, focusing on their relationships to scientific and educational scholars, particularly Thomas Say, the "Father of American Entomology." The talk was well illustrated with slides taken by the author, and was of considerable interest to members and guests in the audience because of Thomas Say's early role in the American Entomological Society.

Ronald F. Romig
Recording Secretary